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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,102	03/31/2004	Edward K. Y. Jung	0104-003-004-000000	9902

7590 08/21/2007

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EXAMINER	
SURVILLO, OLEG	
ART UNIT	PAPER NUMBER
2142	

MAIL DATE	DELIVERY MODE
08/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,102	JUNG ET AL.	
	Examiner	Art Unit	
	Oleg Survillo	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/31/04, 4/22/04, 4/18/05, 7/24/06, 1/16/07, 3/9/07, 4/2/07, 4/16/07, 5/7/07, 6/8/07, 6/29/07, 7/9/07, 7/19/07.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it does not enable the United States Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure. Correction is required. See MPEP § 608.01(b).

4. The application contains disclosure entirely outside the bounds of the allowed claims. Applicant is required to modify the brief summary of the invention and restrict the descriptive matter so as to be in harmony with the claims (MPEP § 1302.01). In particular, it appears that only disclosure of section IV. TRANSMISSSION OF AGGREGATED MOTE-ASSOCIATED INDEX DATA (pages 18-25 of the specification) is relevant to the subject matter claimed in claims 1-29. The rest of the specification describes the subject matter of the co-pending applications wherein the name of each section in the specification corresponds to the name of each of the co-pending applications. Applicants are reminded that the subject matter of the earlier and later sections of the specification (sections I, II, III, and V.) is actually included through their incorporation by reference of the related/parent applications, as mentioned in the beginning of the specification (pages 1-4). As a result, providing a detailed description of the subject matter of co-pending applications is redundant and must be removed from the current application.

Claim Objections

5. Claims 4, 6, 10, and 11 are objected to because of the following informalities:

As to claims 4, 6, and 10, the claim language is unclear. As claimed: ***transmitting ... comprises effecting the transmitting...*** is unclear. Applicants are advised to use a proper part of speech. Appropriate correction is required.

As to claim 11, the claim language is unclear. As claimed: ***transmitting ... comprises encrypting utilizing ...*** is unclear. Appropriate correction is required.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As to claim 13, multi-mote reporting entity appears to be a computer program (specification, page 20, paragraph 2, lines 5-9) (for the interpretation of means plus function language please refer to ***Claim Rejections - 35 USC § 112*** section of the Office Action). A system comprising a computer program per se is not in one of the statutory categories.

As to claims 14-24, additional means for performing a function do not appear to introduce any tangible elements that would render a system of claim 13 statutory under 35 U.S.C. 101.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 13-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Claims 13-24 incorporate means-plus-function limitations reciting a function to be performed rather than definite structure or materials for performing that function.

As to claim 13, limitation: "means for transmitting" is interpreted to invoke 35 USC 112, sixth paragraph.

The current specification shows that transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes is performed by a multi-mote reporting entity (602) (specification, page 20, paragraph 2 lines 5-9). Therefore, means for transmitting are interpreted to be a multi-mote reporting entity (602).

Claim 13 appears to be a single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, and is, therefore, subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph. *In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983)*

MPEP 2164.08(a)

Claims 14-24 are rejected under 35 U.S.C. 112, first paragraph as being dependent from the claim 13.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 25 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 25, it is ambiguous because it is unclear what is being meant by "proximate to a portion of said mote". Appropriate correction or explanation is required.

As to claim 28, it is ambiguous because it is unclear how a multi-mote reporting entity , which is a software program, comprises a processor, which appears to be a hardware component.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1, 3-10, 13, and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (2002/0161751) in view of "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al.

As to claim 1, Mulgund shows:

transmitting at least a part of one or more mote-addressed content indexes of a first set of motes [visiting a node and retrieving the information stored at the node] (paragraphs [0025] and [0062]), wherein the terms "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors (paragraph [0026]) and therefore these terms are used here interchangeably.

Mulgund does not explicitly show that at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes is transmitted.

Madden shows transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes [a collection phase, where the aggregate value are continually routed up from children to parents] (abstract, section 1.1 paragraph 2, section 4 and 4.1 paragraphs 1-2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by transmitting at least a part of an aggregate of one of more mote-addressed content indexes in order to lower the number of message transmissions, latency, and power consumption that the server-based approach (as taught by Mulgund) (Madden, section 4 under In-Network Aggregates).

As to claim 3, Mulgund in view of Madden shows transmitting at least a part of a mote-addressed routing/spatial index (section 2.1, paragraphs 2 and 3, Madden).

As to claim 4, Mulgund in view of Madden shows effecting the transmission with a reporting entity [TinyOS, the mote operating system] (section 1 Introduction, paragraph 1, Madden).

As to claim 5, Mulgund in view of Madden shows obtaining access to the one or more mote-addressed content indexes of the first set of motes [parent node obtaining a message from a child node, message containing one or more mote-addressed content indexes] (section 2.1, last paragraph, Madden).

As to claim 6, Mulgund in view of Madden shows effecting the transmission in response to a schedule (Madden, section 4.1, paragraphs 2 and 3).

As to claim 7, Mulgund in view of Madden shows receiving the schedule (Madden, section 4.1, paragraphs 2 and 3).

As to claim 8, Mulgund in view of Madden shows deriving the schedule (Madden, section 4.1, paragraphs 2 and 3).

As to claim 9, Mulgund in view of Madden shows deriving the schedule at least in part from at least one of an optimized query or a stored query (Madden, section 4.1, paragraphs 2 and 3).

As to claim 10, Mulgund in view of Madden shows effecting the transmission in response to a query (Madden, abstract, section 1.1 the TAG Approach).

As to claims 13, and 15-22, Mulgund in view of Madden shows all the elements, similar to corresponding claims 1, and 3-10 as discussed above.

13. Claims 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (2002/0161751) in view of "TAG: a Tiny Aggregation Service for Ad-Hoc

Sensor Networks" by Samuel Madden et al (hereinafter Madden Ref.1) and in further view of "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. (hereinafter Madden Ref. 2).

As to claim 2, Mulgund in view of Madden Ref. 1 shows all the elements except for sensing index being transmitted [sensors route data back towards the user through a routing tree rooted at the basestation] (section 1.1 paragraph 2, Madden Ref. 1).

Madden Ref. 2 shows at least one of a mote-addressed sensing index [a sensor table of sensors' readings (section 3.1 Basic Language Features)].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden Ref. 1 by transmitting at least a part of at least one of a mote-addressed sensing index in order to report sensor id, light, and temperature readings (section 3.1 Basic Language Features, Madden Ref. 2) and (section 2 last paragraph, Madden Ref. 1).

As to claim 14, Mulgund in view of Madden Ref. 1 and in further view of Madden Ref. 2 shows all the elements, similar to claim 2, as discussed above.

14. Claims 11, 12, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (2002/0161751) in view of "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al. and in further view of Regli et al. (2005/0141706).

As to claim 11, Mulgund in view of Madden shows all the elements except for encrypting utilizing at least one of a private or a public key.

Regli shows encrypting utilizing at least one of a private or a public key (paragraph [0056]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by encrypting utilizing at least one of a private or a public key in order to support encrypted communication at the network layer between wireless devices (paragraphs [0054]-[0056] in Regli).

As to claim 12, Mulgund in view of Madden shows all the elements except for decoding at least a part of one or more mote-addressed content indexes utilizing at least one of a public key or a private key.

Regli shows decoding traffic on the network layer [decryption of traffic] utilizing at least one of a public key or a private key (paragraph [0064]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having at least a part of one or more mote-addressed content indexes (as taught by Mulgund in view of Madden) being decoded utilizing at least one of a public key or a private key (as taught by Regli) in order to support encrypted communication at the network layer between wireless devices (paragraphs [0054]-[0056] and [0064] in Regli).

As to claims 23 and 24, Mulgund in view of Madden and in further view of Regli shows all the elements, similar to corresponding claims 11 and 12, as discussed above.

15. Claims 25, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (2002/0161751) in view of "TAG: a Tiny Aggregation

Service for Ad-Hoc Sensor Networks" by Samuel Madden et al and in further view of "A Transmission Control Scheme for Media Access in Sensor Networks" by Alec Woo et al.

As to claim 25, Mulgund shows a mote (Fig. 1 node (2)).

Mulgund does not explicitly show means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, said means for transmitting proximate to said mote.

Madden shows means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, said means for transmitting proximate to said mote [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having means for transmitting at least a part of an aggregate of one or more mote-addressed content indexes of a first set of motes, said means for transmitting proximate to said mote in order to facilitate routing data between devices (Madden, section 1).

In support to the teaching of Madden, Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack).

As to claim 26, Mulgund shows a mote (Fig. 1 node (2)).

Mulgund does not explicitly show at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index.

Madden shows at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index [a TinyOS that facilitates routing data from child device to a parent device] (section 1 Introduction).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund by having at least one multi-mote reporting entity resident in said at least one mote, said at least one multi-mote reporting entity configured to report at least a part of a multi-mote content index in order to facilitate routing data between devices (Madden, section 1).

In support to the teaching of Madden, Woo shows a complete TinyOS application component graph wherein the sensor component periodically transmits the data toward a base station over the multihop network (section 2.1 Networking Component Stack).

As to claim 29, Mulgund shows at least one of a processor, a memory, or a communications devices formed from a substrate (paragraph [0026]).

16. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (2002/0161751) in view of "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al. (hereinafter Madden Ref. 1) in view of "A Transmission Control Scheme for Media Access in Sensor Networks" by Alec Woo et al. and in further view of "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. (hereinafter Madden Ref. 2).

As to claim 27, Mulgund shows that said multi-mote content index comprises at least one of a sensing function, a control function, or a routing/spatial information of a mote-appropriate device (paragraphs [0037], [0041] in Mulgund).

Alternatively, Madden Ref. 2 shows that said multi-mote content index comprises at least one of a sensing function, a control function, or a routing/spatial information of a mote-appropriate device (under 2.2 Communication in Sensor Networks, paragraph 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden Ref. 1 and further view of Woo by having said multi-mote content index comprises at least one of a sensing function, a control function, or a routing/spatial information of a mote-appropriate device in order to provide mote specific information.

As to claim 28, Mulgund in view of Madden Ref. 1 and in further view of Woo show all the elements except for a processor configured to transmit at least one of a sensing function, a control function, or a routing/spatial information

Madden Ref. 2 shows a processor configured to obtain at least a sensing function of the mote (section 2.1 Properties of Sensor Devices, paragraph 2 in Madden).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Mulgund in view of Madden Ref. 1 and in view of Woo by having a processor in order to process sensor data that is being stored in a knowledge base (Fig. 2 in Mulgund).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oleg Survillo whose telephone number is 571-272-9691. The examiner can normally be reached on M-Th 7:30am - 5:00pm; F 7:30am - 4:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Oleg Survillo

Phone: 571-272-9691

ANDREW CALDWELL
SUPERVISORY PATENT EXAMINER